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ABSTRACT

This paper reports on an ongoing effort of the Vermont Mental Health Performance Indicator Project (PIP) to examine the relevance and utility of standardized test scores for evaluating community mental health programs. This analysis is of test scores from Vermont's first four years of statewide testing. The study is examining anonymous person-level extracts from four existing databases: the Mathematics Skills Assessment and the English Language Reading--Basic Understanding for 4th-, 8th-, and 10th-grade students during 1998 through 2001; the Vermont Mental Health Division's Monthly Service Report; and the Vermont District Court records. For mental health service recipients, performance by boys on the mathematics test increased, whereas the performance of girls decreased. This resulted, however, in similar 10th-grade performance for both boys and girls. Performance on the English test decreased between 8th and 10th grades for both boys and girls in the treatment group. Involvement with the criminal justice system was substantially greater for students who did not participate in the tests than for participants. Results support the value of educational test scores for evaluating systems of care for children and adolescents and for providing valid and reliable information on levels of school participation and school performance for recipients of mental health services. (DB)

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Introduction

Standardized educational test scores are becoming an increasingly important part of the children's services data infrastructure. The recently reauthorized Elementary and Secondary Education Act (also known as the No Child Left Behind Act, 2001) requires statewide reading and mathematics tests each year for children in grades three through eight by 2005-06. This legislation follows efforts in many states to use standardized testing to introduce higher levels of accountability in education. The Vermont Department of Education implemented a statewide, standardized testing program, the New Standards Reference Exams, in 1998. Since that time, public school students throughout the state have been tested on an annual basis in mathematics and English/language at the fourth, eighth, and tenth grade levels. Vermont's standardized tests are not used to determine student advancement, but are used as a core measure of school performance.

This proliferation of standardized testing is occurring at a time when children's mental health programs and service systems are being increasingly called upon to demonstrate their favorable impact on school participation and performance (National Association of State Mental Health Programs Directors, 1998; Rosenblatt, 1998). Within this context, the Vermont Mental Health Performance Indicator Project (PIP) is exploring the relevance and utility of standardized test scores for evaluating community mental health programs. This paper reports on the results of a preliminary analysis of standardized test scores from Vermont's first four years of statewide testing.

Method

Data

The findings reported here are based exclusively on analysis of anonymous extracts from four existing databases. The anonymous, person-level extracts from the Department of Education's *Mathematics Skills Assessment,* and the *English Language Reading: Basic Understanding,* databases for 4th, 8th, and 10th grade students during 1998 through 2001 provided our measures of school participation and performance. The number of young people represented in these education data sets averaged 20,743 per year.

Third, anonymous, person-level extracts from the Vermont Mental Health Division's Monthly Service Report database provided basic information on all young people who received community mental health services during 1998 through 2000. The number of young people in the relevant age groups who were served by community mental health programs averaged 2,279 per year.

Fourth, anonymous event level extracts from the Vermont District Court database provided basic information on all individuals who were charged with a crime in Vermont during 1998 through 2001. The number of young people in the relevant age groups who were charged with a crime set averaged 1,599 per year.

Analysis

School participation is demonstrated by completing the standardized test(s) on grade level or one year later. Operationally, school participation rates for mental health clients are the overlap between the mental health and the school test data set. School participation rates for all young people were obtained by comparing the total number of young people tested to the total population of the state. Our measure of *school performance* is the proportion of students who score at or above the "standard" for the test. Operationally, school performance rates for mental health clients are the overlap between the mental health data set and a data set of "high" test scorers.

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The relationship between these school-based measures and other outcomes was measured by comparing participation/performance rates to rates of being charged with a crime for 16 year old students who scored at or above standard, who scored below standard, and who were not tested (on grade level).

Because the data sets used in this analysis do not share unique person identifiers, Probabilistic Population Estimation was used to determine the number of people who appeared in combinations of data sets. Probabilistic Population Estimation is a statistical procedure that provides valid and reliable measures of the size and overlap of data sets that do not include unique person identifiers (Banks & Pandiani, 2001). These estimates are based on comparisons of the distribution of dates of birth in the data sets to the known distribution of dates of birth in the general population.

Findings

Recipients of community mental health services were less likely to take part in Vermont's statewide school testing than other students. Statewide, only 41% of the mental health service recipients participated in the Mathematics Skills Assessment, compared to 67% of all students. Female service recipients were more likely to participate in school testing than were male service recipients in the 4th and 8th grade, but this difference disappeared in the 10th grade. These patterns were evident for both mathematics and English tests. There were also significant differences among Vermont's regional community mental health programs in relative test participation (controlling for general population participation rates).

Recipients of community mental health services were less likely than other students to score at or above standard on Vermont's standardized school tests. Only 42% of the mental health service recipients scored at or above standard on the mathematics test, compared to 64% of other students, and 49% of service recipients scored at or above standard on the English test compared to 65% of other students. There were no statistically significant differences between age or gender groups in mathematics test performance among service recipients or in the general population. Service recipients' performance on the standardized tests in some regions of the state, however, was similar to the performance of other students.

When change in performance is examined, results for service recipients and other students are similar. There were, however, substantial differences in the rate and direction of change for boys and girls who received mental health services (see Figure 1). On the mathematics test, the performance of boys increased (from 27% to 39% at or above standard) while the performance of girls decreased (from 55% to 43%). The cumulative effect of these changes, however, resulted in similar 10th grade performance on the mathematics test for boys and girls who had received services. Performance on the English test decreased between 8th and 10th grade for both boys and girls in the treatment group, but the decrease for boys (from 48% to 27%) was much greater than the decrease for girls (from 67% to 56%). There were substantial differences among regions of the state in the amount and direction of change in school performance.

Finally, there were statistically significant differences in the likelihood of criminal justice involvement for each of the three groups under examination. During the year after the test, 13% of the young people who did not participate were charged with a crime, compared with less than 4% of the young people who scored at or above the standard on the test. Boys were more likely than girls to be charged with a crime in all three groups, and the difference in rates of criminal justice involvement between groups was greater for boys than for girls.

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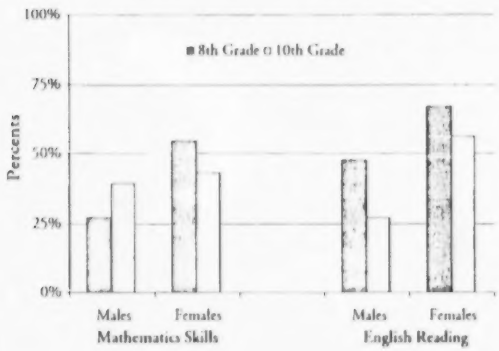
Figure 1
Change in School Performance Between 8th and 10th Grade for MH Service Recipients by Gender



Discussion

We believe this pilot study has demonstrated the value of educational test scores for understanding and evaluating systems of care for children and adolescents. This rich new source of data can provide valid and reliable information on levels of school participation and school performance for recipients of mental health and other children's services programs. This pilot project has highlighted two substantive findings that deserve special attention. First, the fact that gender differences in the school performance of mental health service recipients are different than those for other students suggests the need for careful attention to the impact of gender on the relationship between treatment variables and outcomes.

The use of educational test scores demonstrated here could easily be applied to other service sectors and geographical areas. Other service sectors could include child protection, juvenile justice, and special education programs. Other geographical areas should include urban areas and regions with race/ethnically diverse student populations. Future research would also benefit from consideration of the impact of both community characteristics (socio-economic, population density and diversity, etc.) and individual student characteristics (both clinical and demographic) on levels of school participation and performance for recipients of mental health services and others.

Finally, future research should consider the impact of treatment modalities and service system characteristics on levels of school participation and performance. Differences between emerging evidence-based practice and other modalities should be explored. The impact of medication on school participation and performance is a particularly important area for investigation. Finally, the impact of service system characteristics such as caseload integration and service coordination on school participation and performance of service recipients should be the focus of large-scale cross-region research.

Fortunately, the proliferation of electronic databases in conjunction with statistical technologies such as Probabilistic Population Estimation provide the opportunity for economical and effective research in all of the areas discussed above. This combination of data and methodology provides for the exploration of relationships between treatment variables and a variety of important treatment outcomes while protecting the confidentiality of medical records and the personal privacy of individuals (Pandiani, Banks & Schacht, 1998). This methodology is particularly valuable for examining longer-term outcomes and for research that goes beyond the more traditional focus on negative outcomes such as hospitalization and incarceration to include positive indicators such as employment and participation in post secondary education.

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